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Land Consolidation as a Factor for
Successful Development of Agriculture in Moldova

by

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LAND CONSOLIDATION AS A FACTOR FOR SUCCESSFUL DEVELOPMENT OF AGRICULTURE IN MOLDOVA

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ABSTRACT

Since 1991, Moldova has carried out a wide range of radical reforms affecting its social and economic system. The land reform, which was practically completed in 2000, created over 1 million landowners among the rural population. Many of them entrusted their land to managers of newly created corporate farms. Others used their privately owned land to establish independent family farms. The creation of independent family farms (so-called “peasant farms”) was one of the primary goals of the land reform. More than 280,000 peasant farms have been created, averaging 1,86 hectares in size. The small size of the peasant farms, whose holdings are furthermore split into 3-4 parcels, raises considerable concerns about their long-term viability and has led to an intense public debate regarding the impacts of fragmentation. In this paper, we use the data from several recent surveys in Moldova to support the case for land consolidation. We show that, in the individual sector, larger farms produce higher family incomes and thus farm augmentation makes a positive contribution to the well-being of the rural population. We also show that, for farms of a given size, productivity increases as the number of parcels decreases. After demonstrating the economic advantages of consolidation, we proceed to discuss the actual use of various market mechanisms for land consolidation, including leasing as well as buying and selling of land. We then show that, in our surveys, farms with leased land are in fact larger than farms that rely on owned land only. This completes the logical circle of our argument: land consolidation leads to better economic performance, while land leasing is actually used as a market mechanism for consolidation, which benefits both lessees (through increased farm incomes) and lessors (through income from lease payments for their land).

Keywords: land consolidation, land lease, land market, Moldova.

1. CHANGING FARM STRUCTURE AND FRAGMENTATION OF HOLDINGS IN MOLDOVA

Privatization of agricultural land and assets followed by restructuring of collective and state farms were among the primary goals of Moldova’s transition to a market-oriented economy in the post-Soviet space. The agrarian reforms began in 1992 with the adoption of the first post-Soviet Land Code, which led to effective privatization of land through the distribution of landownership certificates to more than one million rural residents (30% of Moldova’s population). The share of agricultural land in state ownership dropped from 100% in 1990 to less than one-third in 2003, much of it held in state reserve for future reallocation. However, progress with privatization of land did not produce a commensurate shift to individual farming: most of the privately owned land continued to be cultivated in large corporate structures that succeeded the traditional collective and state farms.

After a slow initial phase characterized by political indecision and determined resistance of collective-farm managers to radical changes in land use, the momentum for reform picked up in 1996, when a landmark decision of the Constitutional Court removed certain legal constraints and cleared the way for fundamental changes in the organization of agriculture. A

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significant shift began to be felt already a year later, when the National Land Program (NLP) was launched with USAID support. A pilot phase that achieved complete reorganization of 72 former collective farms was followed by national rollout of the NLP in March 1998. The restructuring program offered free titling to individual landowners, technical assistance with surveying, mapping, and registration, a moratorium on overdue debt penalties, and a debt resolution procedure for new farms created from former collectives (DUMBRAVEANU ET AL., 2001).

The main achievement of the NLP was sweeping allocation of physical plots to individuals on the basis of previously distributed paper certificates of entitlement. However, the universality of land distribution in a small country with a large rural population inevitably produced extreme fragmentation of landownership. As of the end of 2003, some 650,000 holders of land shares, or about two-thirds of all beneficiaries, had withdrawn nearly 900,000 hectares of agricultural land from large-scale collectives (**Table 1**). Each landowner who decided to exercise his rights under the NLP received on average 1.3-1.4 hectares of agricultural land. Combined with the original household plot of 0.3-0.4 hectares, the NLP distribution produced small holdings of less than 2 hectares.

Table 1. Progress with distribution of physical land to rural population (cumulative data 1999-2003)

	1999	2000	2001	2002	2003
Number of people allocated physical plots against land shares, '000	429.0	502.7	565.8	617.0	645.3
Total land allocated against land shares, '000 ha	590.8	701.8	805.4	836.6	867.9
Average allocated plot, ha	1.38	1.40	1.42	1.36	1.33

Source: DSS (2004b), Table 5.1, p. 120; data transposed to end of year.

The fragmentation was further exacerbated by the equity-driven design of the land privatization process in Moldova. To ensure that all peasants had equal access to land of different types, each land share was divided into three separate parts: a share of arable land, a share of orchards, and a share of vineyards. In practice, however, many landowners received more than three parcels against their land shares. In the 2003 World Bank survey of household plots, 53% of respondents had more than three parcels. In the 2003 PFAP survey of peasant farms, 55% reported 3-6 parcels and 19% reported more than 6 parcels (MURAVSCHI, BUCATCA, 2005). The inherently small holdings are further fragmented into still smaller parcels in scattered locations. Land fragmentation in Moldova thus has two characteristics: exceedingly small size of family farms and fragmentation of land ownership into multiple parcels.

Less than half the landowners who received physical plots through the NLP decided to farm their land independently (DSS, 2004a), creating the new category of independent peasant farmers that did not exist prior to reform.¹ The rest (57%) leased their land to operators, including so-called “leaders” or “managers”, i.e., enterprising individuals who founded new corporate farms by consolidating the dispersed small plots of passive landowners. At present, these “leaders” manage about 1,500 farms – limited liability companies, joint stock

¹ Unfortunately, official sources give widely conflicting information on the number of peasant farms and the area of agricultural land they control. In DSS (2004b), one table (p. 120) gives 526,000 hectares in 283,200 registered peasant farms (implying an average of 1.86 hectares per farm), while another table on the next page gives 706,700 hectares (34% more!) in an unspecified number of peasant farms (presumably both registered and unregistered). Another official source (DSS, 2004a) gives an even larger figure for land in peasant farms (around 750,000 hectares). Cadastral data summarized in **Table 3** correspond to 700,000 hectares in 558,000 peasant farms, which implies an average farm size of 1.3 hectares.

companies, agricultural production cooperatives – with an average size of 500-800 hectares depending on organizational form (**Table 2**). The new corporate farms are substantially smaller than the traditional collective and state farms, which averaged 2,000-3,000 hectares in 1990.

Table 2. Number and average size of corporate farms 1990-2004

	1990		2004	
	Number of units	Average size, ha	Number of units	Average size, ha
Traditional forms:				
State farms	432	1,600	72	2,200
Collectives	540	2,800	4	3,400
Interfarm cooperatives	71	1,500	4	50
New organizational forms:				
Joint stock companies			112	440
Agricultural cooperatives			140	820
Limited liability companies			1,263	510
Total	1,043	x	1,595	x

Source: Own calculations based on data of the State Cadastre Agency.

The distribution of land to the rural population led to dramatic changes in the structure of land use by farms of various organizational forms (**Table 3**). Particularly notable is the shrinking share of former state and collective farms and a corresponding increase in land used by the individual sector. Thus, in 1990, about 30% of the 2.5 million hectares of agricultural land in Moldova was managed by state farms and 60% by other corporate forms (collective farms and interfarm cooperatives). The individual sector (household plots at that time) cultivated less than 9%. As of 2003, the individual sector (which now consists of household plots and peasant farms) controls 40% of the agricultural land. Approximately the same land area is operated by large-scale corporate farms, mostly new organizational forms with private ownership of land and assets. These new corporate farms – agricultural production cooperatives, joint stock companies, limited liability companies – are basically corporate shareholder structures with joint cultivation of land. The traditional collective farms practically disappeared during the last decade, as many of them have been privatized or liquidated, while others registered in new legal forms. State farms still persist, but they operate in highly specialized areas that can be legitimately regarded as a public good (seed selection, livestock selection, experimental stations, agricultural education and research).

Table 3. Structure of Agricultural Land Use in 1990 and 2003*

	1990	2003
State sector	32.1	27.4
Reserve land	0.6	16.4
State farms	31.4	11.0
Corporate forms (private sector)	59.5	32.5
Collectives	59.5	0.5
New corporate forms	0.0	31.9
Individual sector	8.5	40.1
Peasant farms	--	27.6
Household plots	8.5	12.5
Total agricultural land	100.0	100.0
'000 ha	2562.2	2528.3

* End of year data, percent of agricultural land, including Transnistria.

Source: State Cadastre Agency, land balance tables; transposed to end of year.

While corporate farms average 500-800 hectares, the individual farms (household plots and peasant farms) are much smaller. Thus, the average peasant farm has 1.9 hectares and only 342 peasant farms (out of some 300,000 in total) are larger than 50 hectares (DSS, 2004b). According to information provided by the Department of Statistics (WORLD BANK, 2005), half the agricultural land in Moldova (excluding Transnistria) is in units smaller than 10 hectares.

This category comprises over 1 million household plots and small peasant farms with average holdings of 0.8 hectares. For comparison, the average farm size in Greece is 4.4 hectares, in Italy 6.1 hectares, and in Portugal 9.3 hectares (in all other EU-15 countries the average farm size is between 17 and 70 hectares). These figures – the small average size and the huge number of small farming units in a population of less than 4 million – clearly demonstrate the extent of fragmentation produced by land reform processes in Moldova.

2. RATIONALE FOR LAND CONSOLIDATION

Common wisdom argues that consolidation of small disjointed parcels into contiguous holdings is preferred by farmers and landowners. This kind of consolidation should reduce production costs and improve net income for a farm of given size. Land consolidation that produces larger farms (keeping the number of parcels fixed) is also believed to be beneficial, as it should reduce the ratio of fixed costs per unit of land, allow more efficient use of technology, and ultimately increase productivity and efficiency. These theoretical arguments, however, are difficult to substantiate empirically and world experience does not unanimously support either position.

Some evidence that supports the advisability of reducing the number of parcels through land consolidation is provided by a 2003 World Bank survey of household plot operators in Moldova. This survey shows a clear negative relationship between productivity and the number of parcels held by the operator. The partial productivities of land and labor are calculated from the survey data as the value of farm income (including cash revenue from sales of farm products and value of own consumption) per hectare of land and per work day (including family workers and outsiders). The results presented in **Figure 1** clearly show that both the productivity of land (farm income per hectare) and the productivity of labor (farm income per work day) decrease as fragmentation (i.e., the number of parcels) increases. The negative relationship between productivity and fragmentation in **Figure 1** is statistically significant by all standard measures.

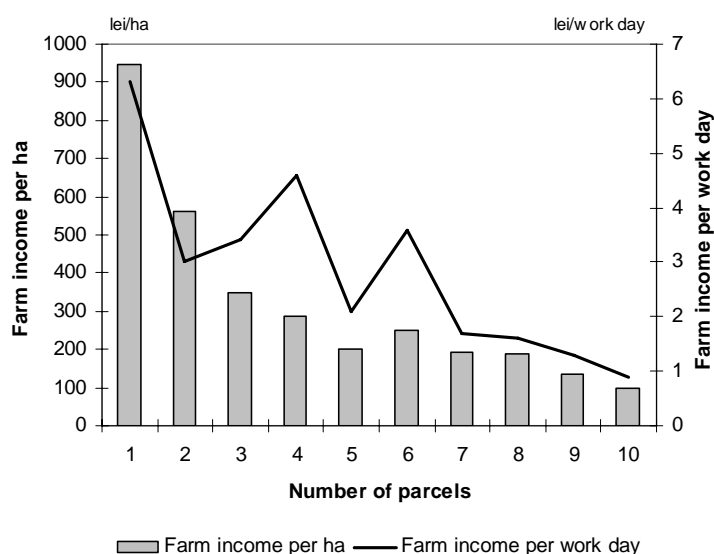
These results are reinforced by running a regression of farm income on three variables: land used, work days, and number of parcels. Controlling for land and labor, the number of parcels has a negative effect on farm income and the coefficient is significant at $p < 0.1$ (**Table 4**). Both analyses thus show that consolidation – in the sense of reducing the number of parcels – makes economic sense, at least for household plots in Moldova in 2003.

Table 4. Regression analysis of farm income versus fragmentation*

Independent variables	Estimated coefficient	Significance level
Land used, ha	98.772	0.000
Labor, work days	0.444	0.000
Number of parcels	-17.077	0.063
Intercept	90.210	0.032
R-square	0.13	

*Dependent variable: farm income (including cash revenue from sales of farm products and value of own consumption)

Source: 2003 WB survey of household plots.

Figure 1: Partial productivity measures versus number of parcels for household plots in Moldova

Source: 2003 WB survey of household plots

This conclusion is supported by the analysis of individual farms in Georgia from the 2003 HUI survey.² The Georgian survey also shows that productivity decreases with the increase of fragmentation, controlling for a number of other relevant factors (LERMAN, 2005).³

To justify consolidation that leads to enlargement of small farms, we need to show that larger farms achieve higher productivity and efficiency. Unfortunately, economies of scale in agriculture are very elusive. Yet it has been generally established that in CIS countries very large (corporate) farms are less efficient (by a variety of measures) than the much smaller individual farms. Evidence of this negative size effect in Moldova from several different surveys is shown in **Table 5**. It is therefore impossible to recommend consolidation of hundreds and thousands of small farms into large agricultural production cooperatives or other “farm enterprises” – a consolidation strategy often advocated by the Ministry of Agriculture in Moldova. This view is supported by the evidence from the 2003 PFAP survey, where 77% of corporate farm managers and 71% of peasant farmers reject the option of consolidation through re-creation of agricultural production cooperatives (MURAVSCHI, BUCATCA, 2005).

Table 5. Total Factor Productivity (TFP) and Technical Efficiency of Small and Large in Moldova

	Small (individual) farms	Large (corporate) farms	Large-to-small ratio
TFP (lei per aggregated unit of inputs)			
2003 WB survey	6,426	4,745	0.74
2003 PFAP surveys	7,424	3,464	0.47
2000 WB survey	8,420	4,010	0.48
Technical Efficiency (Stochastic Frontier algorithm)			
2003 WB survey	0.64	0.46	0.72

Note: All differences between small and large farms statistically significant at $p = 0.10$.

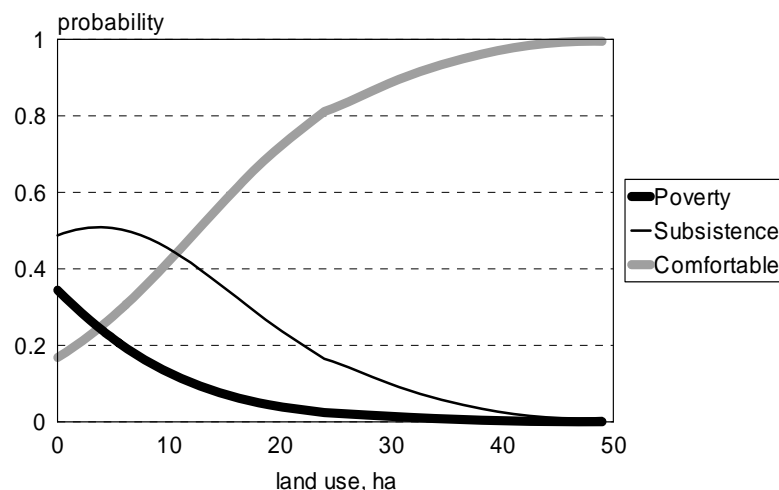
² The 2003 HUI survey in Georgia was conducted by Ayal Kimhi, Department of Agricultural Economics and Management, The Hebrew University of Jerusalem (HUI), Israel, with financial support from USAID/CDR.

³ Contrary to the evidence for Moldova and Georgia, BLAREL ET AL. (1992) did not find a negative relationship between productivity and fragmentation for farms in Ghana and Rwanda. The authors accordingly concluded that “consolidation programs are unlikely to lead to significant increases in land productivity.”

It remains to check the dependence of productivity on size within the sector of small individual farms. Official statistics are not designed to answer this question, and despite the availability of several good farm surveys for Moldova we still cannot say with empirical confidence that the transition from a 1 hectare farm to a 5 hectare farm, say, is accompanied by improvement in productivity and efficiency. Relevant evidence has been obtained only in the 2003 HUI survey for Georgia,⁴ where total factor productivity (TFP) is observed to increase among individual farms that are generally smaller than 10 hectares (the effect of farm size is controlled for fragmentation and specialization). Furthermore, with a quadratic regression model, TFP initially rises as farm size increases, but eventually peaks out and starts decreasing (the turnaround point in the 2003 Georgia survey falls near 3.5 hectares). If similar trends are applicable to Moldova (which still remains to be shown), this evidence can justify consolidation efforts aimed at enlarging very small individual farms to about 5 or possibly 10 hectares, not more.

Consolidation affects not only farm productivity, but also the standard of living of rural families, where a comfortable standard of living is associated with a much larger farm size than lower standards of living. Peasant farmers reporting a comfortable standard of living in the 2005 WB survey have 11 hectares on average, compared with less than 5 hectares for farms in the two lower categories – poverty, when family income is not sufficient to buy food, and subsistence, when family income is sufficient to buy food and daily necessities (the difference between farm sizes is statistically significant at $p < 0.01$). The standard of living of peasant farmers is thus an increasing function of farm size, as is commonly observed in farm surveys in CIS and other transition countries.

Figure 2: Probability of achieving a given standard of living as a function of farm size for peasant farmers.



Note: Definition of standard of living levels: “poverty” – family income not sufficient to buy food; “subsistence” – family income just sufficient to buy food and daily necessities; “comfortable” – family income sufficient to buy food, daily necessities, and durables.

⁴ The Georgian case may be instructive for Moldova, because of the strong similarities in the structure of individual farms between the two countries. The average farm in the 2003 HUI survey had 1.6 hectares divided into 2.4 parcels, with just 1% of the farms in the survey larger than 10 hectares. Judging by the number of parcels, farm fragmentation in Georgia is close to that in Moldova, where the average individual holdings is split into 2-3 parcels. Farm fragmentation in Georgia, as in Moldova, is the outcome of a land-reform strategy that strove, back in 1992, to endow all the rural population with land on an equitable basis.

Source: 2005 WB survey.

The relationship between the standard of living and farm size is illustrated in **Figure 2**. Here the probability of being in the highest standard of living (gray curve) increases with farm size, while the probability of being on the lowest “poverty” level, when family income is not sufficient to buy food (thick black curve), sharply decreases with farm size.⁵ These results provide the ultimate support for land consolidation policies and hence the need to encourage land market development.

3. EXPERIENCE WITH INDIVIDUAL LAND CONSOLIDATION IN MOLDOVA

There are two main groups of approaches to land consolidation in world practice (FAO, 2003). One group relies on formally defined, government-sponsored consolidation projects, which involve reallocation of parcels (with or without reliance on specialized land banks) and are sometimes supplemented by development of rural infrastructure. These formal projects are quite costly to implement and may take a long time to reach agreement among the many participating landowners. The other group includes individual or market-driven consolidation, which implies consolidation of land parcels on an informal and sporadic basis, without direct involvement of the state or participation in any formal consolidation project. Individual consolidation proceeds through land market transactions – leasing or buying and selling of land – initiated by individuals from their own economic considerations. The role of the state is restricted to the creation of the necessary conditions for the development of appropriate market mechanisms, such as joint land use agreements, retirement schemes, leasing, or buying and selling of agricultural land. Individual consolidation is widely used in Moldova, mainly through leasing, but markets for buying and selling of agricultural land are also developing rapidly (see **Section 5**). According to the 2003 PFAP survey, 72% of farm managers regard leasing and buying as the most efficient ways of land consolidation (MURAVSCHII, BUCATCA, 2005). This section and **Section 4** discuss the evidence for individual land consolidation in Moldova. Formal consolidation efforts – both ongoing and proposed – are discussed in **Section 6**.

The results of several recent surveys in Moldova indicate that most of the small landowners created by the National Land Program do not farm their land and lease it to other operators.⁶ The lessees are mainly corporate farms (limited liability companies, joint stock companies, agricultural cooperatives), which hardly own any land and rely almost exclusively on leased land. Peasant farmers also act as lessees, but they generally cultivate a mix of owned and leased land, with the leased component mobilized to increase their original endowment.

There is thus a sharp dichotomy between household plots as supply side players and commercial producers (peasant farms and corporate farms) as agents of the demand side in

⁵ The probabilities of achieving a given standard of living were obtained in a multinomial logistic regression with the three-level standard of living as the discrete dependent variable and farm size as the continuous covariate.

⁶ Land lease relations are governed by the Law on Agricultural Land Leasing passed in 2003. The new law tries to strike a balance between the interests of the operator and the socio-economic guarantees required by the landowner. Thus, the current lessee has preemptive rights for lease contract renewal or for the purchase of the leased property from the owner. The law clearly describes the formal part of the lease process and includes a detailed description of the lease agreement. In general, the spirit of the new law is restrictive. In particular, term limits are stipulated (not less than one year, not more than 30 years; but at least 25 years for orchards and plantations). The lease payment is set at not less than 2% of the administratively prescribed normative price of land, without linkage to the actual market price (which is generally much lower). This “floor” is not effective, however, because the lease payments are typically negotiated as a share of the harvest and their equivalent value is higher than the stipulated minimum percentage.

land markets. Analysis of leasing participation rates in **Table 6** shows that 96% of households lease out land and virtually none leases in land. At the other extreme, 100% of corporate farms lease in land and none leases out. Peasant farms occupy an intermediate position: they act as both lessees and lessors, yet their demand side role clearly predominates, as nearly 30% of peasant farms lease in land and only 8% lease out.

Table 6. Participation in land leasing (percent of respondents)

	Households	Peasant farms	Corporate farms
Leasing out	96	8	0
Leasing in	0	28	100

Source: 2005 WB survey.

Based on the study conducted by the Center for Strategic Studies and Reforms (CISR) in 2003, rural landowners lease out 51% of their land. An even higher leasing-out rate (82% of owned land) is observed in two World Bank surveys, which are the source of the information on the disposition of land by rural households presented in **Table 7**. The average rural household owns 2.7 hectares of agricultural land, but actually farms less than 0.5 hectares, or only 18% of the total endowment. The remaining 2.2 hectares represents land shares received in the process of privatization, and practically everybody leases all this land to other producers.

Table 7. Landownership and land use by rural households

	2005 WB survey		2000 WB survey	
	Area, ha	Percent of owned land	Area, ha	Percent of owned land
Household plot	0.47	18	0.4	13
Land shares (through NLP)	2.20	82	2.6	87
Total owned	2.67	100	3	100
Total used	0.46	18	1.2	40
Leased in	0.00	0	--	--
Leased out	2.21	82	1.8	60

Source: World Bank surveys, 2005 and 2000.

Nobody in the surveys reports selling land in the last three years. While all households surveyed lease out land, not a single respondent reported leasing in land to augment the family holdings.

The role of rural households as the suppliers of land for consolidation in the agricultural sector emerges clearly when we analyze the structure of holdings of the other two cohorts in the 2005 WB survey – peasant farms and corporate farms. In farms of both these types, owned land is only a portion of used land (contrary to household plots, which use only a small fraction of owned land), and the difference is made up by leasing in land from outside sources. Leasing out is hardly practiced by farms of either type (**Table 8**). The reliance on leased land is particularly pronounced for corporate farms, where the component of owned land is very small.

Table 8. Structure of land holdings in farms of different types (in percent of land used)

	Peasant farms		Corporate farms	
	Area, ha	Structure of land use, %	Area, ha	Structure of land use, %
Total owned	5.7	85	14	1
Leased in	1.3	19	1006	100
Leased out	0.3	4	12	1
Total used	6.7	100	1008	100

Source: 2005 WB survey.

Households lease the bulk of their land to corporate farms, which absorb 90% of all land leased by the households in the 2005 WB survey (**Table 9**). The remaining 10% is leased to peasant farms.⁷ Other households, pensioners, or entrepreneurs do not lease land from the small landowners. This in a way is consistent with the observation that the households in the 2005 WB survey do not lease in land. To the extent that peasant farms lease out land, it also goes to corporate farms.

Table 9. Land leasing: who to and who from (percent of leased land)

	Lessors: supply side		Lessees: demand side	
	Households	Peasant farms	Peasant farms	Corporate farms
Farm members/shareholders	--	--	33	12
Households	--	--	67	70
Peasant farms	10	--	--	12
Corporate farms	90	100	--	--
Others	--	--	--	6
Leased land, ha (mean per farm)	2.2	0.3	1.3	1006

Source: 2005 WB survey.

On the demand side, households are the main source of leased land for both peasant farms and corporate farms. Some land is leased internally, i.e., from farm members or shareholders, but fully 70% is leased from outsiders (**Table 9**). The previous World Bank surveys also showed that farmers leased land mainly from rural households. This source accounted for 80% of land leased by peasant farms in the 1997 WB survey and over 90% of leased land in the 2003 WB survey. The remainder was leased from local authorities and to a certain extent from the local corporate farm (especially in 2003). Peasant farms acting as lessors provide 12% of the leased land in corporate farms.

Both lessors (households) and lessees (peasant farms and corporate farms) provided consistent estimates for lease terms and lease payments. The average lease term is typically 3 years, with very few lessors or lessees reporting longer lease terms. This is consistent with the 2003 CISR survey, where 70%-80% of lessees (depending on the organizational form) report 3-year leases. The relatively short lease term may be an obstacle to sustainable land consolidation, as it does not encourage investment in land improvement and infrastructure. Most lessees expressed dissatisfaction with short-term leasing, because it did not allow efficient utilization of leased land and could not ensure stable long-term income. It is indicative that in the 2003 CISR survey the 3% of lessors reporting long lease terms of 10-30 years were primarily wineries, which needed the stability of long-term leases to justify investment in new vineyards.

The annual lease payments are around 800 lei per hectare for all categories of respondents (**Table 10**). The differences in lease payments across farm types are not significant: corporate farms pay for leased land roughly the same as peasant farms. Lease payments of 800-900 lei per hectare per year are relatively high compared with land prices of 5,000-6,000 lei per hectare as estimated from state cadastre data (see **Table 14**): the implied capitalization rate is close to 15%, which is substantially higher than the 10% rule of thumb rate. Economically, it makes more sense to buy than to lease, but the land market constraints (especially the high transaction costs – see below) still discourage buying and selling of land. In the 2005 WB survey none of the respondents – whether households, peasant farms, or corporate farms – reported buying or selling land in the last three years.

⁷ This is very close to the results of other surveys: in the 2000 WB survey 86% of households' leased land went to corporate farms and 11% to peasant farms; in the 2003 CISR survey, corporate farms absorbed 84% of leased land and peasant farms 10%.

Table 10. Lease term and annual lease payments (survey results)

	Households (lessors)	Peasant farms (lessees)	Corporate farms (lessees)	All sample
Lease term	3.2 (1-10)	2.6 (1-3)	3.1 (1-10)	3.1 (1-10)*
Lease payments, lei/ha	761	846	900	820
In cash	790	756	753	773
In kind	750	924	967	844

* Only 8% of respondents report terms longer than 3 years (5-10 years) and 9% report very short term leasing for 1 year.

Source: 2005 WB survey.

Why do managers lease in land? In the 2004 IAMO survey of 104 corporate and peasant farms in Moldova, more than 40% of respondents expressed the view that they found it more profitable and more efficient to cultivate larger plot. Nearly 30% indicated that they preferred to lease plots adjacent to the existing farm. These two factors explain the strategy of leasing in additional land from local villagers and neighbors to augment the farm. Farm managers seem to realize that land consolidation allows them to use land more efficiently. The survey also explored the difficulties that managers and farmers face in their attempts to lease in land. It is encouraging to note that nearly 30% of respondents did not report any difficulties in their lease transactions. Among those who did mention difficulties, high transaction costs ranked highest (16% of respondents), followed by lack of cash to cover lease payments (14%), and uncertainty about land prices in the absence of functioning markets (11%). Curiously, 12% of farm managers complained of insufficient supply of land, and that despite the manifested tendency of small landowners to entrust their land to operators.

What reasons do the households give for leasing out land? The main reason is insufficiency of resources. In the 2003 CISR survey, 65% of lessors identify lack of machinery and purchased inputs as the main cause for leasing out land; in the 2005 WB survey, 40% of lessors put the blame on insufficient labor, while difficulties with access to purchased inputs and credit (or money in general) rank next (GUDYM ET AL., 2003). In aggregate, reasons associated with the functioning of normal markets are cited by 78% of the households in the 2005 WB survey as responsible for their decision to lease out land (**Table 11**). It may be argued that these individuals would tend to farm the land on their own if the missing or distorted markets were corrected. This conjecture is supported by the observation that respondents who attribute leasing to market imperfections express a desire to increase their plot size by a substantially greater factor than respondents who lease out because of physical deficiencies of their land.

Table 11. Reasons to lease out land and relationship with augmentation factor for households

	Percent of lessors	Grouped reasons	Percent of lessors	Desired augmentation, times land used
Plot too far from house	1	Physical	15	1.0
Plot too small	3			
Land of poor quality	0			
Farming not profitable	11			
Inputs not available	19	Market	78	4.7
No money	15			
Insufficient labor	40			
No marketing channels	3			
Obligated to lease as member/shareholder	7	Institutional	7	50.0

Source: 2005 WB survey.

Health and age are important factors in the decision to lease out for pensioners and elderly people. In the 2003 CISR survey, 80% of the pensioners and 70% of landowners older than 60 cited health and age as main reasons for leasing out their land. In the 2003 PFAP survey,

the highest percentage of landowners who intended to lease out their land (36%) were 60 or older (MURAVSCHI, BUCATCA, 2005).

4. THE IMPACT OF LEASING ON LAND CONSOLIDATION

The creation of new corporate farms by “leaders” is the most obvious manifestation of land consolidation through leasing. In this way, farms with 500-1,000 hectares of land are created by enterprising individuals who lease the dispersed and fragmented plots of hundreds and even thousands of small inactive landowners. Yet the results of various surveys in Moldova confirm that land leasing also promotes consolidation in the individual sector, where the landowner is an active farmer with an initial endowment of 2-3 hectares.

Survey results consistently show that peasant farms with leased land are, on average, much larger than farms based only on privately owned land. The consolidation effect achieved by peasant farms through land leasing is demonstrated in **Table 12**, which is based on the results of World Bank surveys conducted in 1997, 2003, and 2005.

Table 12. Size of peasant farms with and without leased land

	1997 WB survey		2003 WB survey		2005 WB survey	
	Farms w/out leased land	Farms with leased land	Farms w/out leased land	Farms with leased land	Farms w/out leased land	Farms with leased land
Percent of farms	94	6	79	21	72	28
Total land use	2.8	16.9	3.8	11.6	3.7	9.5
Private land	2.8	3.4	3.8	3.1	3.7	5.0
Leased land	--	13.5	--	8.5	--	4.5

Source: World Bank surveys, 1997, 2003, and 2005.

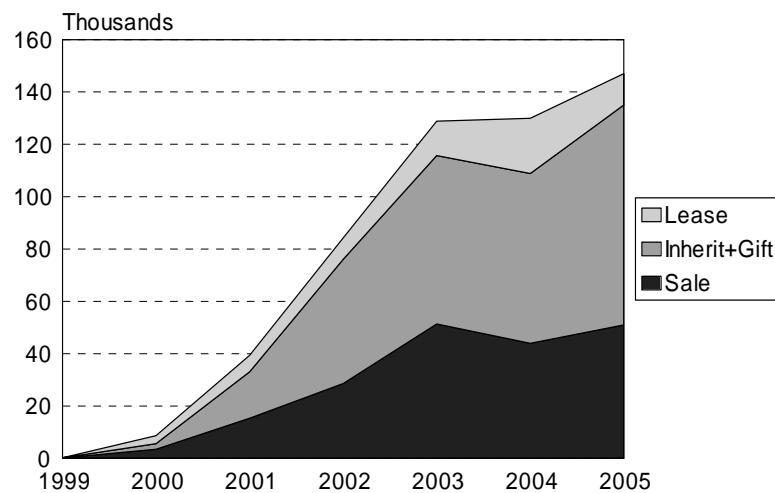
In another World Bank survey conducted in 2000, it was impossible to separate the farms into those with and without leased land, as in **Table 12**, because all surveyed farms—both individual and corporate—relied heavily on land leased from outsiders to increase their size. Instead of a two-category analysis, a continuous regression analysis was carried out. It revealed a very strong correlation between farm size and the amount of leased land: on average, an increase of 1 ha in land holdings was achieved entirely through leasing from outsiders ($R^2=0.85$, $p < 0.001$).

The results in **Table 12** incidentally show that the markets for land leasing evolved strongly over time: only 6% of peasant farmers reported leasing land in the 1997 survey, and this percentage increased to 28% in the 2005 survey. Although no comprehensive official statistics on lease transactions are available to this day, the number of lease transactions recorded in the State Cadastre increased from around 3,000 to more than 21,000 between the years 2000 and 2004 (this includes only contracts for a lease term of 3 years and longer). The land lease market has definitely grown much stronger as leaders of the new corporate farms join private farmers in competing for additional land among inactive landowners.

5. LAND MARKET DEVELOPMENT IN MOLDOVA

Individual land consolidation by its very nature requires functioning land markets that provide a medium for leasing, buying, and selling of land. In the early 1990s, land market activity in Moldova was restricted by a moratorium on buying and selling of land and by unrealistically high normative prices and transfer taxes. These obstacles were gradually removed between 1997 and 1999 (starting with the adoption in 1997 of the Law on Normative Price of Land and Procedures for Sale and Purchase of Land), and the mass distribution of land plots to individual owners as part of the NLP triggered rapid emergence of land market transactions. Thus, transactions in agricultural land increased from virtually zero in 1999 to about 130,000 in 2004 (**Figure 3**). During the 5-year period 2000-2004, the State Cadastre Agency reports nearly 400,000 agricultural land transactions, and by the end of 2005 the cumulative number of transactions is expected to exceed 550,000.

Figure 3: Number of transactions in agricultural land in Moldova



Note: Data for 2005 are extrapolated to a full year.

Source: State Cadastre Agency.

Of the total number of recorded transactions, 51% are transactions involving inheritance and gifts, 36% involve buying and selling of land, and the remaining 13% are leasing transactions. The officially reported share of leasing transactions is much smaller than in reality (see **Section 3**). This apparent discrepancy arises because only lease contracts for a term of 3 years or longer are subject to registration in the regional cadastre office. Moreover, anecdotal evidence suggests that many peasant farmers lease land from their relatives, without concluding a formal lease agreement, which also biases the official lease statistics downward.

Cadastre records show that some 150,000 hectares of agricultural land were sold and bought in 160,000 transactions between 1999 and 2005. The average land sale transaction was thus less than 1 hectare (**Table 13**). This is the average size of a parcel recorded as a cadastral object in the system, reflecting the original fragmentation of the land shares in the process of privatization. Each physical transaction by one buyer could involve many such small parcels. An entrepreneur buying 120 hectares of land would have to register 200 average transactions to complete the transfer of ownership. The average transaction size remained fairly constant at 0.6-0.7 hectares between 1999-2003, and then increased significantly to more than 1 hectare in 2004-2005. The increase in average transaction size between 1999-2003 and 2004-2005 may in fact reflect certain parcel consolidation trends in Moldova. Despite these positive developments, buy-and-sell transactions constitute only one-third of all officially recorded

land transactions in Moldova, and their role in land consolidation so far seems to be marginal compared to the role of the widespread leasing arrangements.

Table 13. Transacted area of agricultural land (excluding leasing)

	Transacted area, ha			Percent of total		Average transaction, ha		
	Sale	Other ownership transfers	Total	Sale	Other ownership transfers	Sale	Other ownership transfers	Total
1999	74	28	102	73	27	0.68	0.48	0.57
2000	1879	1364	3243	58	42	0.61	0.61	0.61
2001	9,238	14,201	23,439	39	61	0.62	0.74	0.65
2002	17,599	28,825	46,424	38	62	0.63	0.59	0.61
2003	36,248	47,036	83,284	44	56	0.66	0.68	0.67
2004	53,818	40,421	94,239	57	43	1.15	0.58	0.73
2005	32,363	38,952	71,215	45	55	1.62	0.89	1.06
1999-2005	151,121	170,825	321,946	47	53	0.88	0.68	0.72

Note: Data for 2005 are extrapolated to a full year.

Source: State Cadastre Agency.

The median price of agricultural land in 2004-05 was 5,400 lei per hectare across 11 territorial cadastre offices excluding the capital Chisinau (**Table 14**). The land prices showed considerable regional variation. The price of land within the municipal limits of Chisinau was an order of magnitude higher: 53,000 lei per hectare in 2004-05. Although strictly speaking this is agricultural land, the higher prices in the capital probably capture expectations of windfall profits from non-farming uses that will become possible through eventual rezoning.

Table 14. Median land prices for buy-and-sell transactions (lei/ha)

	2004-2005		1999-2005 (2005 prices)*	
	Agricultural land	Household plots	Agricultural land	Household plots
All Moldova (excl. Chisinau)	5,380	11,780	5,540	14,850
Chisinau	52,636	264,204	61,547	285,341

Source: State Cadastre Agency.

*Adjusted for inflation using the following CPI values: 2004-05=100; 2003=88.0; 2002=78.9; 2001=74.9; 2000=68.2; 1999=52.0 (IMF Country Report No. 05/53, February 2005).

These prices were estimated for agricultural land outside the village limits. Household plots, i.e., small parcels of land within the village limits, generally sold for much higher prices per hectare (**Table 14**).

Excessively high transaction costs and complex administrative procedures constitute a serious obstacle to land consolidation through buying and selling. The costs associated with registration of transfer of ownership are estimated at 277 lei per transaction (**Table 15**; for similar independent estimates see CCA (2003)). This figure underestimates the true transaction costs as it does not include the cost of making two trips to the district cadastre office – one trip to submit the paperwork, another trip to collect the new title, which is estimated at about 35-40 lei, raising the cost to over 300 lei per transaction. Nor does it include the cost of surveying and mapping the plot: these activities were carried out with USAID funding as part of the NLP and are free to the landowner.

Since the average sale transaction recorded in the State Cadastre is 0.9 hectares (see **Table 13**), purchasing one hectare of agricultural land involves practically one cadastral transaction (one “parcel”) and carries transaction costs of about 300 lei. The average price of agricultural land in Moldova is around 5,000 lei per hectare (excluding Chisinau; see **Table 14**) and the transaction cost is thus 5%-10% of the price of land.

Table 15. Land transaction costs according to the standard and the consolidation procedures

	Standard procedure		Consolidated procedure	
	Lei	%	Lei	%
Extract from cadastre registry	24	9	--	--
Authentication of sales contract by notary	180	65	25	42
State tax for authentication	15	5	--	--
New record of ownership	42	15	34*	58
Certificate of land quality	16	6	--	--
Total	277	100	59	100

Source: State Cadastre Agency.

*Reflects a rebate or a grant of 8 lei per title paid by the government to the municipality executing the consolidated procedure.

The main cost component is the notary fee for authentication of documents. It is charged at 180 lei per transaction and thus accounts for 65% of the total transaction costs. In theory, notary fees are charged pro rata on a sliding downward scale. However, the sliding scale starts at 1.3%, but not less than 180 lei. The minimum fee is 1.3% of 14,000 lei, which is equivalent to a 3-hectare transaction. This threshold is seldom reached in practice, because the average transaction for registration purposes is 0.9 hectares. If the minimum were eliminated, the notary fee for the average transaction would be 65 lei instead of 180 lei. To reduce transaction costs under conditions of Moldova's highly fragmented holdings, the unrealistically high minimum fee should be abolished and notary fees should be calculated pro rata.

High transaction costs in general, and high notary fees in particular, are damaging for large agricultural investors even more than for small farmers. As noted previously, an entrepreneur buying 120 hectares of land would have to register 200 average transactions to complete the transfer of ownership. The transaction cost would reach 60,000 lei, or 10% of the 600,000 lei paid to landowners.

There seems to be a possibility of reducing the transaction costs from the present level of about 300 lei to somewhere around 60 lei by adopting a consolidated procedure, whereby the primaria secretary prepares a single list of all parcel sales in the village at a particular time and then travels alone to the district cadastre office on behalf of all the buyers and sellers (**Table 15**). The primaria secretary is legally empowered to act as a notary for the local residents, typically charging 25 lei for the services (compared with 180 lei notary fees). Furthermore, with his close knowledge of the local scene, the secretary can authenticate the sales contract without requiring a cadastral extract, thus eliminating another cost component. This procedure has been developed within the framework of the USAID-funded Land Privatization Support Program (LPSP) and it is currently being implemented on an experimental basis in the village of Jora de Mijloc in Orhei District. If officially approved, it may lead to substantial savings in transaction costs for buyers who are forced to assemble their holdings from a mosaic of small parcels.

An even more radical solution to the problem of high transaction costs is to charge all fees on the basis of a whole physical transaction, and not for each cadastral object ("parcel") separately. This, however, may involve considerable changes in the configuration of the cadastral objects recorded in the system and thus require additional costs for surveying and mapping. On the other hand, drastic reduction of transaction costs will adversely affect the income of the territorial cadastral offices, which by design cover their operating costs from fees and taxes. The realization of radical cost-reducing measures therefore should be

considered only in the whole context of costs and benefits of land consolidation programs with proper external financing.

6. FORMAL LAND CONSOLIDATION EFFORTS IN MOLDOVA

The various approaches to land consolidation are based on common principles. First, land consolidation schemes should not dispossess people of their right to land. The process should be participatory, democratic, and based on market principles. Land consolidation should not result in making people landless. Second, policy makers should remember that not all fragmentation is a problem and land consolidation must address only cases where land fragmentation is really a problem and not impose a solution where it is not needed. Finally, it is necessary to realize that it will not be possible to eliminate land fragmentation entirely.

The State Planning Institute for Land Management (Giprozem) has been the traditional vehicle for land consolidation in Moldova. Nine consolidation projects, mainly in the South of the country, have been carried out in recent years, but lack of funding is limiting the Institute's consolidation activities. The focus of the projects typically appears to be an investor buying or leasing land from smallholders. In Cociulia village, Cantemir District, 257 plots comprising 294 ha were consolidated into 181 plots and changed owners. One specific project in Tomai village, Stefan-Voda District, aims to consolidate fragmented holdings by recreating cooperative or collective farms. The private landowners are issued land titles without a physical location of the plot and become shareholders in the cooperative. Landowners who are not willing to merge their land into the cooperative are offered an exchange outside of the main collective area.

Valuable experience with the implementation and design of land consolidation has been accumulated since May 2003 in the framework of the USAID-funded Land Privatization Support Project (LPSP). In response to specific requests to deal with agricultural land fragmentation, the LPSP enlarged its scope of activities and launched in 2004 a land consolidation pilot project in Antonesti village in Stefan-Voda district in the South of Moldova (LPSP, 2004). Over 200 landowners participated and around 160 ha were consolidated to a single winery via 25-year lease agreements. At the beginning of 2005 additional consolidation projects were implemented in other areas.

In most LPSP projects the instrument of consolidation is selling land to an investor, not leasing. An LPSP consolidation project is typically initiated by a buyer (a winery or an agricultural enterprise), who over a period of time has tried to purchase contiguous land plots for large-scale agricultural production. It is the responsibility of the buyer to negotiate the agreements with the small individual owners. The project only serves as an intermediary between landowners and buyers and supports the mayor's office in the village in the use of a simplified land transaction method developed under the LPSP in compliance with the procedures of the 2002 Amendment to the Land Code. When small owners with land plots in the interest area prefer not to sell their land, they are normally offered voluntary exchange of their land for other plots in order to make the original land available for the project initiator. The focus of the LPSP consolidation projects is the main buyer or investor, and the result is development of large-scale farms, often owned by wineries or agricultural enterprises from outside of the village. The development or enlargement of family farms is an incidental byproduct. A major achievement of the LPSP projects is the development of a simplified registration and implementation procedure for the project land transactions, where some of the tasks normally carried out by a notary can be handled by the mayor's office for a much lower fee or even free of charge (see **Table 15** and the related discussion in **Section 5**).

Given the accumulated experience, the Government of Moldova has recently decided to implement a National Program of Land Consolidation (NPLC) with financial support from the World Bank, based on concepts proposed by a team from the Danish Ministry of Agriculture (HALDRUP, HARTVIGSEN, 2005). The land consolidation program should produce improvements in location, ownership, and land use that exceed what individuals can accomplish in bilateral exchange of land with each other (i.e., through individual consolidation). Moreover, it should provide an organizational framework to achieve throughputs much in excess of those currently achieved by individual consolidation or other consolidation projects. In contrast to the ongoing land consolidation activities, the new program will focus primarily on small peasant farms and not on large corporate structures. The operational emphasis is on landowner preferences and on identifying land exchanges in which people are willing and able to engage. The land exchange transactions are organized as buying and selling among landowners. The existence of a large state land reserve in Moldova (16% of agricultural land – see **Table 3**) can act as a catalyst in re-parcelling, simplifying the task and improving the end result. The success of the procedure depends entirely on the willingness and readiness of landowners to exchange their land plots. Unfortunately, in the 2003 PFAP survey over 80% of respondents indicated that they would not agree to accept a new land plot in the process of land consolidation (MURAVSCHI, BUCATCA, 2005).

The entire process is based on voluntary participation and the participants retain the freedom of choice throughout: they may decide to leave the project at any stage before the final transaction agreement is signed. The consolidation solution is not known at the outset and it only emerges at the very end as a result of multilateral negotiations. There is no need to secure guidance or approval by the authorities, and the voluntary participatory nature of the process reduces the likelihood of costly and time-consuming appeals.

The current intention is to launch the NPLC in six pilot villages, thus enabling all the procedures to be ironed out before national rollout. The pilot will test the demand for voluntary land consolidation from small landholders and verify the available sporadic evidence that indicates popular support for small-scale consolidation (as distinct from consolidation into large-scale cooperatives). One of the possible barriers to project success is a low demand for land or absence of active buyers in many rural locations. Absentee ownership or non-participation may also require development of new imaginative tools. How to proceed with land consolidation if there are parcels belonging to absentee owners in the middle of the field or if a small number of landowners refuse to participate and instead try to sell their land to outsiders at speculative prices?

Two possible solutions to these difficulties – both requiring new legislation – are being currently debated in Moldova. According to one proposal, landowners who do not farm their land for a certain length of time (e.g., three years) will be obliged to sell their holdings to the local authorities at an average market price. The authorities will then re-sell the land to active farmers at the same average price, thus taking part in the consolidation process in the role of a local land bank. According to another proposal, if a small minority of landowners (e.g., 10%) block the local consolidation program by their refusal to participate (i.e., voluntarily sell or exchange their land parcels), they will be obliged by law to exchange their plots for equivalent land from the village reserve (if other options to use reserve land directly for consolidation have failed).

Land consolidation through market transactions, including the proposed NPLC as well as individual consolidation efforts, does not require any new legislation in Moldova. The existing land legislation, and specifically the article on land consolidation in the 2002 Amendment to the Land Code, is sufficient for this task. Any formal re-parceling programs

should supplement market-driven consolidation through buying and leasing of land by private entrepreneurs, not replace it.

7. CONCLUSIONS AND RECOMMENDATIONS

There are two dimensions of land fragmentation in Moldova: small size of family farms and fragmentation of land ownership. The most common approach to land consolidation in Moldova is individual or market-driven consolidation, which relies on land market transactions – mainly leasing at the present stage. The prevalence of short-term lease agreements is an obstacle to land consolidation as it discourages investment by lessees in land improvement and infrastructure. Excessively high transaction costs are an obstacle to the development of buy-and-sell transactions for land consolidation. Agricultural policy therefore should encourage longer term leasing and simplify the ownership-transfer procedures. Specifically, transaction costs can be reduced by abolishing the minimum notary fee and allowing the buying and selling of multiple parcels by one person to be treated as a single consolidated transaction.

Market-driven consolidation of agricultural land does not require new legislation, as the existing land laws are sufficient for this purpose. However, consolidation based on formal government-sponsored projects will require certain amendments to the Land Code.

Consolidation of small fragmented parcels into contiguous holdings is preferred by both farmers and landowners. However, land consolidation should be carried out on a voluntary basis in accordance with market principles. Land consolidation projects should supplement market-driven consolidation, not replace it.

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